

Application No. 10/598,005

Amdt. Dated: February 21, 2011

Reply to Office Action Dated: November 22, 2010

### **AMENDMENTS TO THE DRAWINGS**

The attached two sheets of drawings respectively include changes to Fig. 1 and new Fig. 2. These two sheets, which respectively include Figs. 1 and 2, replace the single original sheet including Fig. 1. Fig. 1 has been amended to indicate that it is now one of two sheets (“1/2”), and Fig. 2 has been added to illustrate certain features of the claimed invention, as requested by the Office. Fig. 1 and 2 do not add new matter.

Attachment: Replacement Sheets

### **REMARKS/ARGUMENTS**

The Examiner is thanked for the non-final Office Action mailed November 22, 2010.

The status of the application is as follows:

- Claims 1-20 are pending, claims 1 and 6-10 have been amended, and claims 11-20 have been added;
- Claims 1 and 9 are objected to for informalities;
- The drawings are objected to.
- Claims 1 and 9 are rejected under 35 U.S.C. 112, first paragraph;
- Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph;
- Claim 10 is rejected under 35 U.S.C. 112, second paragraph;
- Claims 1-2 and 4-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. (A General Technique for Interstudy Registration of Multifunction and Multimodality Images; 1994 IEEE Trans. On Nuclear Medicine; 41 (6); pp 2850-2855); and
- Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. in view of Pluim et al. (Mutual-Information-based Registration of Medical Images: A Survey; 2003; IEEE Trans. On Medical Imaging, 22(8); pp 986-1004).

The objections and rejections are discussed below.

#### **The Objection to Claims 1 and 9**

Claims 1 and 9 stand objected to for informalities. This objection should be withdrawn because claims 1 and 9 have been amended herein to cure the informalities.

#### **The Objection to the Drawings**

The drawings are objected to under 37 CFR 1.83(a) for failing to show every feature of the invention specified in the claims. In particular, the Office objects to drawings for not showing the features in claims 3, 7 and 10. With respect to claim 3, the objection to the drawings should be withdrawn as applicant has submitted herewith a new figure (Fig. 2) showing, at least, the features of claim 3. Support for the new figure can be found at least at page 2, lines 4-14, of the instant application. No new matter has been added. Moreover, it is to be understood that new Fig. 2 is not necessary to understand the claimed invention, which is more

than sufficiently described in the specification and the claims. Rather, Fig. 2 has been submitted simply to expedite fruitful prosecution. With respect to claims 7 and 10, the specification has been amended herein to clarify that the features of these claims are shown in Figs. 1 and/or 2. Support for this amendment can be found at last in originally filed claims 7 and 10. No new matter has been added. In view of the foregoing, applicant requests withdrawal of this objection.

**The Rejection of Claims 1 and 9 under 35 U.S.C. 112, First Paragraph**

Claims 1 and 9 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. Claims 1 and 9 have been amended herein, and, in view of these amendments, the rejection should be removed.

**The Rejection of Claims 7 and 8 under 35 U.S.C. 112, Second Paragraph**

Claims 7 and 8 stand rejected under 35 U.S.C. 112, second paragraph, for lacking antecedent basis of the limitation in the claim. Claims 7 and 8 have been amended to cure the lack of antecedent basis. Accordingly, this rejection should be withdrawn.

**The Rejection of Claim 10 under 35 U.S.C. 112, Second Paragraph**

Claim 10 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 10 has been amended herein, and it is believed the amendment obviates this rejection. Therefore, applicant requests withdrawal of the rejection.

**The Rejection of Claims 1-2 and 4-10 under 35 U.S.C. 102(b)**

Claims 1-2 and 4-10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Lin et al. This rejection should be withdrawn because and Lin et al. (hereafter referred to as Lin) does not anticipate claims 1-2 and 4-10.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987). MPEP §2131.

Independent Claim 1

Claim 1 has been amended to incorporate aspects of claim 6 (which depends from claim 1 and thus no further search is necessitated) and now additionally recites "...where areas of at least one of the transformed images are masked and where at least one of the imaging methods does not supply reliable information ...". Lin does not teach this claim feature.

In Lin, MRI brain scan data and original PET images are obtained (see section II, first three paragraphs). The MRI brain scan data is segmented into different components (see section II, last paragraph and section II.A). Radiotracers are assigned to the different components of MRI brain scan data to create scaled segments (see section II, last paragraph and section II.B). Simulated functional images (PET images) are generated by making different combinations of the scaled segments (see section II, last paragraph and section II.B). The simulated images are matched with the original PET images (see section II, last paragraph and section II.C).

The Office Action states that claim 6 is rejected for the same reasons as claim 5. Claim 5 is rejected under page 2850, Col. 1 of Lin, which the Office states shows performing exclusion of non-brain structures (on MR images). However, in Lin the MR image data is not a transformed image. In Lin, simulated PET images are matched with original PET images and the simulated PET images are based on the MR image data. Thus, the exclusion discussed by the Office is performed on original data (MR image data) and not modified images (simulated PET images). Therefore, this exclusion is not performed on areas of at least one of the transformed images, but at most is performed on an original image.

In addition, the actual action of exclusion of non-brain structures falls well short of this claim feature. Exclusion of non-brain structures is different from masking. Moreover, Lin makes no mention of one of the imaging method supplying reliable information or not. Nothing in Lin relates to at least one of the imaging methods not supplying reliable information.

Based on the above remarks, the rejection should be withdrawn.

Claim 6

Claim 6 depends from claim 1 and has been amended herein to further emphasize various aspects of the original claims. No new matter has been added. The references of record do not

disclose amended claim 6. Entry of the amendment and allowance of claim 6 is respectfully requested.

#### Independent Claim 9

Amended claim 9 recites "...generating a first transformed image from the first image obtained from a first imaging method...generating a second transformed image from a second image obtained for a second imaging method...registering the first transformed image and the second transformed image." Claim 9 also recites "...where the first transformed image and the first image are different images, and where the second transformed image and the second image are different images..." Lin does not teach these claim features. As discussed regarding claim 1, Lin aligns measured functional images (the original PET images) to corresponding simulated image (the simulated PET images). At best, this shows registering a transformed image with an original image and not registering a first transformed image with a second transformed image. In view of the above, this rejection should be withdrawn.

#### Dependent Claims

Claims 2, 4-8, and 10 stand rejected under 35 U.S.C. 102(b) as being anticipated by Lin. Claims 2 and 4-8 depend from independent claim 1 and thus incorporate features of independent claim 1. Claim 10 depends from independent claim 9 and thus incorporates features of independent claim 9. In view of the above arguments, claims 1 and 9 are believed allowable over the cited references and the rejection of claims 1 and 9 should be withdrawn as well as the rejections claims that depend from claims 1 and 9. Other issues raised in the Office Action with respect to additional features claimed by each of the dependent claims 2, 4-8, and 10 are moot at this time and not conceded by the applicant. For at least these reasons, the rejection should be removed.

#### **The Rejection of Claim 3 under 35 U.S.C. 103(a)**

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin in view of Plum et al. Claim 3 depends from independent claim 1 and thus incorporates the features of claim 1. In view of the above remarks in connection with the rejection of claim 1, claim 1 is

Application No. 10/598,005

Amdt. Dated: February 21, 2011

Reply to Office Action Dated: November 22, 2010

believed to be allowable. Since the claims that depend from claim 1 are allowable, claim 3 is allowable. Moreover, Pluim et al. does not teach or suggest the aspects of claim 3 or cure the above-noted deficiencies of Lin with respect to claim 1. Other issues raised in the Office Action with respect to additional features claimed by claim 3 are moot at this time and not conceded by the applicant. For at least these reasons, the rejection should be removed.

Application No. 10/598,005  
Amdt. Dated: February 21, 2011  
Reply to Office Action Dated: November 22, 2010

**Conclusion**

In view of the foregoing, it is respectfully submitted that all the claims pending in this patent application are in condition for allowance. Reconsideration and allowance of all the claims are respectfully solicited.

If, however, the Examiner believes that there are any unresolved issues requiring adverse final action in any of the claims now pending in the application, it is requested that the Examiner contact the applicant's attorney, so that a mutually convenient date and time for a telephonic interview may be scheduled for resolving such issues as expeditiously as possible.

In the event there are any errors with respect to the fees for this response or any other papers related to this response, the Director is hereby given permission to charge any shortages and credit any overcharges of any fees required for this submission to Deposit Account No. 14-1270.

Respectfully submitted,



Anthony M. Del Zoppo, III Reg. No. 51,606  
Driggs, Hogg, Daugherty & Del Zoppo Co., L.P.A.  
38500 Chardon Road  
Willoughby Hills, Ohio 44094  
Phone: 1.440.391.5100  
Fax: 1.440.391.5101

Direct all correspondence to:  
Philips Intellectual Property & Standards  
Customer Number: 24737